

CLAIMS

We claim:

1. A method of constructing a mobile storage system on a supporting surface, comprising the steps:
 - providing a plurality of file cabinets, wherein each file cabinet includes a housing and a plurality of pull-out drawers movably mounted to the housing for movement between an open position and a closed position;
 - securing each file cabinet housing to a carriage, wherein each file cabinet housing is held by the carriage and wherein the drawers of each file cabinet are movable relative to the carriage between the open position and the closed position;
 - positioning a plurality of axially extending rails on the supporting surface; and
 - movably mounting the carriage to the rails.
2. The method of claim 1, wherein the carriage comprises a series of interconnected carriage sections, and wherein the step of securing each file cabinet housing to the carriage is carried out by securing each file cabinet housing to one of the carriage sections.
3. The method of claim 2, wherein each carriage section comprises a pair of spaced apart mobile housing members, each of which is movably supported on one of the rails, and wherein the step of securing each file cabinet housing to the carriage is carried out by securing each file cabinet housing to and between a pair of spaced apart mobile housing members.
4. The method of claim 3, wherein the step of providing a plurality of file cabinets is carried out by providing at least a pair of side-by-side file cabinets, and wherein the step of securing each file cabinet housing to and between a pair of spaced apart mobile housing members is carried out by securing the file cabinet housing of the pair of side-by-side file cabinets to a common mobile housing member which is operable to support the pair of side-by-side file cabinets on one of the rails.

5. The method of claim 2, wherein the carriage is constructed by providing a primary carriage section and adding an additional carriage section for each file cabinet to be secured to the carriage.

6. The method of claim 5, wherein the step of adding a carriage section is carried out by securing a structural cross-brace assembly to and between each of a pair of mobile housing members.

7. The method of claim 2, further comprising the step of engaging a retainer arrangement between the carriage sections and the rails.

8. The method of claim 7, wherein each carriage section comprises an interconnected pair of spaced apart mobile housing members, each of which is movably supported on one of the rails, and wherein the step of engaging a retainer arrangement between the carriage sections and the rails is carried out by securing
5 a retainer member to each mobile housing member, and engaging the retainer member with retainer structure defined by the rail.

9. The method of claim 8, wherein the step of securing the file cabinet housings to the carriage sections is carried out by securing each file cabinet housing to at least one of the retainer members.

10. The method of claim 1, wherein the plurality of file cabinets includes an endmost file cabinet, wherein the housing of the endmost file cabinet includes an upstanding sidewall, and further comprising the step of providing an end panel arrangement which includes a frame adapted to overlie at least a portion
5 of the upstanding sidewall, wherein the frame defines an interior, and wherein the end panel arrangement further includes a cover arrangement demountably engaged with the frame for enclosing the interior defined by the frame.

11. The method of claim 10, wherein the step of providing the end panel arrangement includes interconnecting the frame with the upstanding sidewall of the file cabinet and with the carriage.

12. The method of claim 10, further comprising the step of interconnecting an input drive arrangement to the sidewall of the endmost file cabinet.

13. The method of claim 1, wherein the step of positioning a plurality of axially extending rails on the supporting surface is carried out by placing the rails on the supporting surface, and engaging one or more floor members to and between adjacent rails, wherein the floor members are operable to
 5 space the rails a predetermined distance apart from each other.

14. The method of claim 13, wherein the step of engaging the one or more floor members to and between adjacent rails is carried out by forming a pair of spaced apart grooves in an underside defined by each floor member, and engaging a lip defined by each rail within one of the grooves, wherein the distance
 5 between the grooves functions to control the spacing between the rails.

15. The method of claim 13, wherein the carriage comprises a series of interconnected carriage sections, and wherein the one or more floor members are configured so as to space the rails a predetermined distance apart from each other corresponding to a width defined by each carriage section.

16. The method of claim 1, wherein each file cabinet housing includes a substantially flat top wall, and further comprising the step of mounting a canopy member to the top wall, wherein the canopy member defines a non-flat upper surface.

17. A system for mobilizing a series of drawer-type storage units relative to a support surface, wherein each storage unit includes a housing and a series of pull-out drawers, wherein each drawer is movable between an open position and a closed position, comprising:

5 a carriage adapted to support the storage unit, wherein the carriage includes a series of interconnected axially extending mobile housing members;

a series of rails adapted for placement on the support surface, wherein the rails extend in a direction substantially parallel to the direction of movement of the drawers, and wherein the carriage is movable on the rails by
 10 engagement of each mobile housing member with one of the rails; and

a retainer arrangement interposed between the carriage and the rails, comprising one or more rail engagement members interconnected with the carriage and including a retainer section, and axially extending engagement

structure defined by the rail, wherein the retainer section is movably received
 15 within the engagement structure defined by the rail for preventing upward
 movement of the carriage relative to the rail.

18. The system of claim 17, wherein each mobile housing member
 defines a pair of spaced apart ends, and wherein a rail engagement member is
 mounted toward each end of each mobile housing member.

19. The system of claim 18, wherein the carriage comprises a series
 of interconnected carriage sections and includes a pair of endmost mobile housing
 members and a plurality of interior mobile housing members located between the
 endmost mobile housing members, wherein each interior mobile housing member
 5 is common to a pair of adjacent carriage sections.

20. The system of claim 19, wherein each rail engagement member
 further includes a storage unit mounting section, wherein the storage unit
 mounting section of each rail engagement member is adapted for connection to
 the housing of one of the storage units for securing the storage unit to the carriage.

21. The system of claim 20, wherein each carriage section is
 adapted to support one of the storage units, wherein the storage unit mounting
 section of each rail engagement member associated with the interior mobile
 housing members is adapted for connection to the housing of each of a pair of
 5 adjacent storage units supported by the interior mobile housing member.

22. The system of claim 18, wherein the engagement structure
 defined by the rail comprises an upwardly facing groove in combination with at
 least one overlying lip, and wherein the retainer section of each rail engagement
 member comprises a retainer tab adapted for placement within the channel,
 5 wherein the retainer tab is configured so as to engage the overlying lip to maintain
 the retainer tab within the channel to prevent upward movement of the carriage
 relative to the rails.

23. The system of claim 17, wherein the carriage defines a pair of
 spaced apart ends, and wherein each of a pair of endmost storage units is adapted
 to be supported by the carriage adjacent one of the carriage ends, wherein at least
 one of the endmost storage units defines an outwardly facing upstanding sidewall,

- 5 and further comprising an end panel arrangement located at one of the ends of the carriage, wherein the end panel arrangement includes a frame defining an interior and overlying at least a portion of the upstanding sidewall of one of the endmost storage units, and at least one cover member demountably engageable with the frame, wherein the cover member is configured to enclose the interior of the
- 10 frame to conceal the portion of the upstanding sidewall of the endmost storage unit.

24. The system of claim 23, wherein the frame is mounted to the carriage end and to the upstanding sidewall of the endmost storage unit.

25. The system of claim 17, wherein the carriage defines a pair of spaced apart ends, and wherein each of a pair of endmost storage units is adapted to be supported by the carriage adjacent one of the carriage ends, wherein each endmost storage unit defines an outwardly facing upstanding sidewall, and further
- 5 comprising a drive system including an input drive member drivingly interconnected with the mobile housing members, and an input arrangement mounted to the upstanding sidewall of one of the endmost storage units and interconnected with the input drive member.

26. The system of claim 25, wherein the input arrangement of the drive system includes a rotatable input member rotatably mounted to an input mounting member, and wherein the input mounting member is mounted to the upstanding sidewall of one of the endmost storage units for securing the rotatable
- 5 input member thereto, and wherein the drive system further includes a flexible input member drivingly engaged with the rotatable input member and the drive member for imparting rotation to the drive member in response to rotation of the rotatable input member.

27. The system of claim 26, further comprising a combination locating and support member interconnected with the input mounting member for positioning the input mounting member at a predetermined elevation relative to the carriage.

28. The system of claim 27, wherein the locating and support member is secured to the upstanding sidewall of the endmost storage unit along with the input mounting member.

29. The system of claim 17, wherein the rails are placed on the support surface in spaced apart relationship, and further comprising a series of floor members located between and engaged with adjacent rails, wherein the floor members and the rails include cooperating engagement structure which is
5 operable to maintain the rails at a predetermined spacing.

30. The system of claim 29, wherein the carriage comprises a series of interconnected carriage sections, wherein each carriage section includes a pair of mobile housing members and is adapted to support one of the storage units, and wherein each carriage section defines a width corresponding to the spacing
5 between adjacent rails, such that each mobile housing member is movably supported by one of the rails.

31. The system of claim 30, wherein the carriage includes a pair of endmost mobile housing members and a plurality of interior mobile housing members located between the endmost mobile housing members, wherein each interior mobile housing member is common to a pair of adjacent carriage sections
5 and wherein each interior mobile housing member is configured to support the housing of each of a pair of adjacent storage units.

32. The system of claim 29, wherein the cooperating engagement structure comprises a pair of grooves formed in an underside defined by each floor member, wherein each groove is located adjacent a side edge defined by the floor member, and an upstanding lip defined by each rail, wherein each lip is
5 adapted to be received within one of the grooves for fixing the spacing between adjacent rails.

33. A carriage for a mobile storage system, comprising:
a series of spaced apart mobile members, wherein each mobile member includes an axially extending housing; and

a structural cross-brace arrangement extending between and
 5 interconnected with the axially extending housing of each of a pair of adjacent mobile members.

34. The carriage of claim 33, wherein each mobile member includes a pair of spaced apart wheels rotatably mounted to the axially extending housing.

35. The carriage of claim 34, wherein the cross-brace arrangement includes a pair of brace members connected to and extending between the axially extending housing of each of a pair of adjacent mobile members, wherein the pair of brace members cross each other at a location between the pair of mobile
 5 members.

36. The carriage of claim 35, wherein the brace members are arranged in an x-type configuration between the pair of adjacent mobile members.

37. The carriage of claim 34, wherein the carriage comprises a pair of endmost mobile members and a plurality of interior mobile members located therebetween, wherein each interior mobile member includes a pair of spaced apart brace mounting areas located one on each of a pair of sides defined by the
 5 axially extending housing, wherein the structural cross-brace arrangement includes a brace member secured to and extending between spaced brace mounting areas of each of a pair of adjacent interior mobile members.

38. The carriage of claim 37, wherein the axially extending housing of each interior mobile member defines first and second ends, wherein a first one of the brace mounting areas is located toward the first end and a second one of the brace mounting areas is located toward the second end, and wherein the brace
 5 member secured to the first brace mounting area of each of the mobile members is connected to the second brace mounting area of the adjacent mobile member, and wherein the brace member connected to the second brace mounting area of each mobile member is connected to the first brace mounting area of the adjacent mobile member.

39. The carriage of claim 34, wherein each wheel is rotatably mounted to the axially extending housing between a pair of wheel supports.

40. The carriage of claim 39, wherein the housing defines a pair of spaced apart sidewalls, wherein each wheel support extends between and is interconnected to the sidewalls.

41. The carriage of claim 40, further comprising a retainer member secured to one of the wheel supports, wherein the retainer member includes a retainer tab movably engaged with a rail adapted to support each mobile member.

42. The carriage of claim 40, further comprising an end bumper interconnected with one of the wheel supports, wherein the end bumper extends outwardly from an end defined by the mobile member and is adapted to engage the end bumper of a mobile member of an adjacent carriage for maintaining a
5 predetermined spacing between the adjacent carriages.

43. The carriage of claim 42, further comprising a retainer member secured between the wheel support and the end bumper.

44. The carriage of claim 43, wherein the retainer member includes a mounting protrusion, and wherein the end bumper is engaged with the mounting protrusion for mounting the anti-tip retainer member to the wheel support.

45. The carriage of claim 39, further comprising a cover member extending between each pair of adjacent mobile members, wherein the cover member is secured to one of the wheel supports of each mobile member.

46. The carriage of claim 34, wherein each wheel is rotatably mounted to an axle, and wherein the axle is engaged with a pair of bearings located one on either side of the wheel, and further comprising a pair of bearing supports, each of which is mounted to one of the bearings, and wherein the
5 bearing supports are secured to the axially extending housing to mount the wheel to the axially extending housing.

47. The carriage of claim 46, wherein the housing includes a top wall and a pair of spaced apart depending sidewalls, wherein each bearing support includes a top wall engagement area which is engageable with the top wall for preventing rotation of the bearing support relative to the housing.

48. The carriage of claim 47, wherein each bearing support is interconnected with one of the sidewalls of the axially extending housing.

49. The carriage of claim 46, wherein the housing includes a top wall and a pair of spaced apart depending sidewalls, wherein each sidewall includes a slot within which the axle is received, and further comprising a pair of wheel supports extending between and interconnected to the sidewalls, wherein
 5 the wheel supports are located one on either side of the wheel.

50. The carriage of claim 33, wherein the structural cross brace arrangement includes a pair of brace members, wherein each brace member is secured to a brace mounting member associated with the housing of one of the mobile members.

51. The carriage of claim 50, wherein the housing includes a pair of spaced apart sidewalls, and wherein the brace mounting member comprises a transverse member extending through a slot formed in each of the sidewalls of the housing and defining a pair of brace mounting areas, each of which is located
 5 outwardly of one of the housing sidewalls.

52. The carriage of claim 51, wherein each mobile member includes a pair of wheel assemblies mounted to the housing, and wherein each transverse member is mounted to the housing at the location of one of the wheel assemblies.

53. The carriage of claim 52, wherein each wheel assembly includes a bearing support which engages the transverse member when the wheel assembly is secured to the housing to maintain the transverse member in engagement with the housing.

54. A method of assembling a carriage for a mobile storage system, comprising the steps of:

positioning a series of mobile support members in spaced apart relationship; and

5 interconnecting adjacent mobile support members with each other by securing a structural cross-brace arrangement to and between the adjacent mobile support members.

55. The method of claim 54, wherein each mobile support member includes a housing defining first and second ends, and wherein the step of interconnecting adjacent mobile support members is carried out by connecting a

pair of brace members between the housings of the adjacent mobile support
 5 members, wherein each brace member is connected toward the first end of one of
 the housings and toward the second end of an adjacent one of the housings.

56. The method of claim 55, wherein each mobile member includes
 a pair of spaced apart wheels rotatably mounted to the housing, and wherein the
 step of interconnecting the brace members with the mobile support members is
 carried out by connecting each brace member to the mobile support member
 5 housing at the location of one of the wheels.

57. The method of claim 55, further comprising the step of securing
 a first cover member to and between the first ends of the housings of each of a
 pair of adjacent mobile support members, and securing a second cover member to
 and between the second ends of the housings of the pair of adjacent mobile
 5 support members.

58. In a mobile storage system including a mobile carriage adapted
 for movement on a support surface, wherein the carriage is adapted to support one
 or more storage units including an endmost storage unit, the improvement
 comprising an end panel arrangement located above the carriage base, wherein the
 5 end panel arrangement includes a frame adapted to overlie at least a portion of an
 upstanding wall defined by the endmost storage unit, wherein the frame defines an
 interior, and a cover arrangement demountably engaged with the frame for
 selectively enclosing the interior defined by the frame.

59. The improvement of claim 58, wherein the frame defines
 external dimensions which correspond to the upstanding wall of the endmost
 storage unit, such that the frame overlies substantially the entire surface area of
 the upstanding wall of the endmost storage unit.

60. The improvement of claim 59, wherein the frame is adapted for
 connection to the upstanding wall of the endmost storage unit.

61. The improvement of claim 59, wherein the cover arrangement is
 demountably engaged with the frame by means of a releasable connection
 arrangement interposed between the frame and the cover arrangement.

62. The improvement of claim 61, wherein the cover arrangement comprises one or more cover tiles defining an inwardly facing surface adapted to face the upstanding wall of the endmost storage unit, and an opposite outwardly facing surface, wherein the releasable engagement arrangement enables each tile
 5 to be selectively engaged with and disengaged from the frame.

63. The improvement of claim 60, wherein the carriage is movable relative to the support surface by means of a drive arrangement associated with the carriage, and further comprising a drive input arrangement secured to the upstanding wall of the endmost storage unit and located within the interior defined
 5 by the frame.

64. The improvement of claim 63, wherein the drive input arrangement includes a manually operable input member, and wherein the cover arrangement includes one or more cover members, at least one of which is configured so as to provide access to the manually operable input member.

65. A method of covering the sidewall of an endmost storage unit in a mobile storage system, wherein the mobile storage system includes a mobile carriage adapted for movement on a support surface, wherein the carriage is adapted to support a series of storage units including the endmost storage unit,
 5 comprising the steps of:

mounting an end frame outwardly of the sidewall of the endmost storage unit, wherein the end frame overlies the sidewall of the storage unit and defines an interior; and

releasably engaging one or more cover members with the end frame,
 10 wherein the one or more cover members are configured to enclose the interior of the end frame and to conceal the sidewall of the endmost storage unit.

66. The method of claim 65, wherein the one or more cover members comprise a first set of cover panels, and further comprising the step of removing the first set of cover panels from the end frame and releasably engaging a second set of one or more cover panels with the end frame.

67. A mobile storage system, comprising:
 a mobile carriage;

a rail including axially extending engagement structure, wherein the carriage is movably supported on the rail;

- 5 a plurality of storage units supported by the mobile carriage; and
 at least one combination retainer and storage unit mounting member secured to the carriage, and including a storage unit mounting section to which the storage unit is mounted, and a retainer section movably engaged with the axially extending engagement structure of the rail, wherein the retainer section and the
 10 engagement structure of the rail are configured to prevent upward movement of the carriage relative to the rail.

68. The mobile storage system of claim 67, wherein the mobile carriage includes a series of spaced apart wheel housings, each of which includes one or more wheels engaged with and supported on one of the rails, and wherein the combination retainer and storage unit mounting member is secured to one of
 5 the wheel housings.

69. The mobile storage system of claim 68, further comprising a structural cross-brace arrangement extending between and interconnected with each of a pair of adjacent wheel housings.

70. The mobile storage system of claim 68, wherein the engagement structure of the rail comprises a groove and at least one overlying lip, and wherein the retainer section of the combination retainer and storage unit mounting member comprises a laterally extending retainer tab located within the
 5 groove and engageable with the overlying lip for preventing upward movement of the wheel housing.

71. The mobile storage system of claim 70, wherein the engagement structure of the rail comprises a pair of lips overlying the groove and defining a space therebetween in communication with the groove, and wherein the laterally extending retainer tab is interconnected with a neck area disposed within
 5 the space defined between the pair of lips.

72. The mobile storage system of claim 68, wherein the wheel housing includes a top wall, wherein at least one storage unit is engaged with the top wall for supporting the storage unit above the wheel housing, and wherein the

- storage unit mounting section of the combination retainer and storage unit
- 5 mounting member extends above the top wall of the wheel housing for connection to the storage unit.

73. The mobile storage system of claim 72, wherein the storage unit mounting section comprises a mounting member engageable with a wall defined by the storage unit, wherein the mounting member is secured to the storage unit wall by means of a fastener extending therebetween.

74. The mobile storage system of claim 72, wherein the wheel housing further includes a pair of sidewalls depending from the top wall, and further comprising a wheel support extending between and interconnected with the sidewalls, wherein the combination retainer and storage unit mounting
- 5 member is secured to the wheel support.

75. The mobile storage system of claim 72, wherein the top wall supports adjacent sides of each of a pair of storage units, and wherein the storage unit mounting section of the combination retainer and storage unit mounting member is connected to each of the storage units supported by the top wall.

76. The mobile storage system of claim 68, further comprising a bumper member supported by and extending outwardly from the combination retainer and storage unit mounting member.

77. A method of assembly for a mobile storage system including a series of rails and at least one a mobile carriage movably supported on the rails, comprising the steps of:

- placing a plurality of storage units on the carriage;
- 5 connecting a combination anti-tip and storage unit mounting member to the carriage, including the step of engaging a retainer section defined by the combination anti-tip and storage unit mounting member with retainer structure defined by the rail; and

- securing at least one of the storage units to the combination anti-tip
- 10 and storage unit mounting member.

78. The method of claim 77, wherein the mobile carriage includes a series of spaced apart interconnected wheel housings, each of which defines a top

- 5 wall, wherein the step of placing the storage units on the mobile carriage is carried out by engaging a pair of storage units with each wheel housing top wall, and wherein the step of securing at least one of the storage units to the combination anti-tip and storage unit mounting member is carried out by securing a pair of storage units to the retainer section of the combination anti-tip and storage unit mounting member.

79. The method of claim 77, wherein the mobile carriage includes a series of spaced apart interconnected wheel housings, each of which includes a pair of sidewalls between which at least one wheel is located, and further includes a wheel support member extending between and interconnected with the sidewalls, and wherein the step of connecting the combination anti-tip and storage unit mounting member to the carriage is carried out by securing the combination anti-tip and storage unit mounting member to the wheel support member.